

might even promise to give the reduction a permanent character. All this would not, as I have already shown, be disarmament, it would only be a *reduction of the standard of military instruction*. So that the Prussian Government would realize the amount of the saving without disarming, while the foreign government reducing its contingent would also save a certain amount, but would actually disarm.

If, on the other hand, the Prussian Government wished to show itself sincere, it would reply that a disarmament would entail in Prussia a renunciation of the principle of compulsory service, and it would explain the grave reasons why it could not make the sacrifice. Thus its reply would be a formal refusal.

In one case only would a proposal for disarmament have any sense whatever.

That is, if the government making the proposal wished to bring about a rupture.

It may even be stated that there is no question better fitted to bring about such a thing, for it would produce discussions, disputes of every kind, and, finally, a *status quo*. The situation of the two governments might be compared to that of two men, one of whom calls on the other, as a pretext for a quarrel, to do something impossible. The last word would then be, "Do you not wish to disarm? Well, let us fight."

But, I repeat, a government which should make at Berlin a proposal for a disarmament in an open, loyal manner could, if the Prussian Government were sincere, be only met by a refusal. The latter, in its reply, would point to compulsory service, as an unanswerable argument; it would explain its motives for adhering to this principle. And of this, I am well assured, that to all proposals, all objections, all entreaties, it would give a military *non possumus* as obstinate as the religious *non possumus* uttered on the banks of the Tiber.

ON SOME FORTRESSES IN THE VALLEY OF THE RHINE.

Report of the 16th June, 1870.

Napoleon I, in the instructions addressed to General Clarke, termed Mayence, Cologne, and Wesel, *the three bridles of the Rhine*, meaning that he, who held these places is master, and ought to continue master, of the Rhine. The numerous lines of railway converging towards Mayence, Cologne, Duisbourg and Neuss, have still further increased the military importance of these three points, and the striking language of the Emperor is, perhaps, still more true at the present day. Mayence, Cologne, and Wesel—Mayence especially—will play a conspicuous part in any future war.

It was therefore only natural, that Prussia should ask herself, at the end of 1866, if these places, and in general those of the valley of the Rhine, were adapted to the exigencies of modern war, and more particularly those consequent on the improvements in artillery. I will briefly point out, what has been, or is proposed to be done, to these places.

Mayence.

Prussia, as is known, occupies Mayence by virtue of a convention concluded in 1866 with the Grand Duke of Hesse Darmstadt. The fortress is now nearly in the same state that it was before the war. This may appear strange; for so great is the importance of Mayence, owing to the position it occupies at the confluence of the Rhine and the Main, that the first care of Prussia should have been to modify the works, and construct a great intrenched camp, as we are doing at Metz.

It is thought that Prussia would have already done this, if Mayence and the surrounding country on the left bank of the Rhine belonged to the North German Confederation. But this country is situated in that part of Hesse which remains independent, and Prussia dare not push her boldness so far as to erect works there, for fear of provoking the complaints of the Grand Duke and perhaps the jealousy of France. I do not think that there is any other reason for this, and this is also the reason why she does not fortify the Hechtsheim heights (*vide* the plan I herewith send). This height is situated to the south of Mayence upon the road which a French invading army would follow, at 2,000 yards only from the advanced works, and 2,500 from the *enceinte*, and at the same distance from the skew railway bridge over the Rhine. The importance of the Hechtsheim heights has not escaped German engineers, and during the year 1867 a keen dispute was kept up in the newspapers on the necessity of building detached forts there, but the subject has since dropped. It is evidently very advantageous for us that these heights have not been fortified, for the greater the reason why we should not knock our heads against Mayence if it were a great intrenched camp; the more reason is there in the actual state of things, the passage of the Sarre being forced, that we should march straight on Mayence. Once in possession of the Hechtsheim heights, we may, thanks to modern artillery, after a short siege, be master of Mayence, for batteries established at Hechtsheim command the town, and take the skew bridge over the Rhine *en écharpe*.

As I have said, Mayence is in the same state now, that it was in 1866, and no works have been constructed on the Hechtsheim heights. But it is a settled thing that the town is to be enlarged. The 8th of last April the Municipal Council, after a keen discussion, decided to pay the 400,000*l.* asked by Prussia for the ground requisite for this enlargement, and at

the end of April placards have been put up in the town giving a ground plan of the space purchased. The *enceinte* will then be carried further to the north, so as to include that part of the plain called the Gartenfeld, which I have marked red on the attached plan. The estimate for these works is 500,000*l.* and 900,000*l.* for the land.

It is believed that these works will begin next autumn.

Cologne.

Cologne, situated on the direct road from Paris to Berlin, and a point where numerous railways converge possesses great importance. For four years the question of increasing the defences of this place have been discussed. The project actually adopted appears to be, to rase the exterior forts, to replace them by others further from the town, and at the same time extending the *enceinte* of the town by including several of the surrounding places. The cost of doing this, including the purchase of land, is estimated at 1,300,000*l.* to 1,500,000*l.*

Wesel.

Wesel, the other *bridle of the Rhine*, is not a railway junction. Railways converge a little higher: 1st. Towards Neuss and Dusseldorf, 50 miles from Wesel, and, 2nd. Towards Duisbourg, 25 miles from Wesel, consequently it has been decided to leave Wesel as it is, and substitute two great *têtes de pont*, one at Hamm, opposite Neuss, the other at Duisbourg. This is an application of the principle long ago adopted in Prussia of fortifying the more important railway junctions.

The *tête de pont* of Hamm will form a very large and strong work. It is considered that its erection will last three years. It is well advanced now. I suppose French Officers have already been directed to study it. The *tête de pont* at Duisbourg is not yet begun, I believe. I will finish this report by some remarks on other fortresses in the basin of the Rhine.

Germersheim.

A very strong fortress, has been some years ago made at this place, situated on the Rhine, above Spire, and intended to defend the course of the river. It has been improved by five advanced works, constructed on the banks of, and three batteries sweeping, the Rhine.

Rastatt.

This place is well known in all its details. I limit myself to repeating that during the last Session of the Baden Chambers, a sum of money sufficient to increase the armament, and improve the works was voted.

Conz.

Conz is situated at the confluence of the Sarre and Moselle. After the evacuation of Luxembourg by the Prussians, it was much discussed if Prussia should replace the Luxembourg fortress, by another strong place situated near our frontier, opposite Thionville, and Metz, for some time it was proposed to make an intrenched camp at Conz. I have visited the position at Conz, and I cannot understand how the question of placing an intrenched camp there could ever have been discussed, for it offers none of the necessary conditions. The idea is at present abandoned, Prussia with justice thinks she can better employ her resources in improving the existing fortresses on the Rhine. I attach to this report:—

1. A plan of the environs of Mayence.
2. A copy of a book termed “Der Infanterie Pionnier Dienst;” this book is published with authority.

Every Officer here is authorised to write on any subject, and to publish books likely to spread information in the Army. When a book is approved of by the Minister of War, the Officer is allowed to publish it *with authority*. The author of the book in question has had for his object, the instruction of Officers and and Non-Commissioned Officers of Infantry in such portions of the duty of Engineers as it appears useful for them to know.

3. The new navy list of the North German Confederation.

APPLICATION OF THE LAW OF 1861, AND REDUCTION OF
EXPENDITURE.

Report of the 24th June, 1870.

1. The Application of the Law of 1861 on Military Organization.

When a power adopts a new law of military organization, as Prussia did in 1861, and France in 1868, a certain number of years must elapse, before this law can be applied in all its details. Thus, for example, the law of the 1st February, 1868, will not produce its complete effects in France for several years. So far as the Prussian Army is concerned it is requisite if one wishes to know it, to give an account from time to time of the successive changes, which the application of the law of 1861 has introduced, into its component parts. The year 1871 will mark an important epoch, as it will terminate for that portion of the army belonging to old Prussia, a transition period; in other words, in 1871 this portion of the Prussian Army will be constituted in all its details; in conformity with the law of 1861, modified by that of 1867.

To explain this more clearly, I will first state the general heads of the law of 1861. The reasons which induced the

Prussian Government to alter the law of the 3rd September, 1814, are known; they were the radical defects which were obvious, defects which displayed themselves in a deplorable way during the campaigns of 1848, and 1849, in Baden, and the Schleswig campaign and the mobilizations of 1850, and 1859. (*Vide* my report of November 1866). A real and declared ambition, and a vague feeling, that its power would, when opportunity offered, enable it to play a considerable part in Europe, produced the wish to increase the military power of the country. Events since then have rewarded Prussia for her foresight. And the King, when judged by history, will be acknowledged as the persevering organizer of the powerful army that astonished the world in 1866. The Prussian Government had a sufficient reason to make the desired augmentation of the army acceptable; this was the return to the strict application of the principle of compulsory service for all citizens, which had since 1814 been continually evaded. So that until 1859, that is to say for 45 years, the annual contingent remained the same as in 1814 (about 40,000 men). Whilst the population of Prussia had gradually increased during the same period from 10 to 18,000,000, the Government resolved first to apply the principle of compulsory service in all its rigour, and consequently it has brought into the ranks, since 1859, contingents of 63,000 men,* and has created 36 regiments of Infantry and 10 regiments of Cavalry, making the number of the first 81, and of the latter 48.

Another important measure gave the new law its true character. It was decided that the Landwehr should no longer form a portion of the active field army, and this object was attained by adding two contingents to the reserve, or increasing the period spent in the reserve, by men quitting the regular army, from two to four years.

As for the Landwehr, the part it had to play was reduced in theory to home defence. The general arrangements of the new organization were as follows:—

1. A considerable increase of the army, by making the annual contingents stronger.

2. The exclusion of the Landwehr from the field army.

The duration of service being 19 years.

Regular Army, 7 years	$\left\{ \begin{array}{l} 3 \text{ with the Colours.} \\ 4 \text{ in the Reserve.} \end{array} \right.$
Landwehr, 12 years	

This law was promulgated in 1861, but the great increase of the cadres of which I have spoken took place in 1859-60. The law had been in force for about six years when the war of 1866 broke out, and it had not then attained its full development, for Prussia had not at that time, at her disposal

* The number called in 1858 was only 26 per cent. of the number of young men fit for service; it was raised to 40 per cent. in 1859.

four contingents of Reserve men, but only three, namely, those of 1860, 1861, 1862, and she was consequently compelled to complete her battalions to a war footing with men of the Landwehr. After the war Prussia, enlarged by three provinces, Hanover, Schleswig-Holstein, and Hesse, naturally increased her military strength. The number of Infantry regiments was raised from 81 to 105, that of Cavalry from 48 to 68, &c., but the law of 1861 underwent only a slight modification, in virtue of which the length of service was reduced from 19 to 12 years (law of the 9th March, 1867). This reduction was made in the number of years spent in the Landwehr, which was reduced from 12 to 5, the 2nd class being entirely suppressed. The periods of service are now—

In the Regular Army, 7 years	{	3 with the Colours.
In the Landwehr	5	,,
	—	
	12	,,

After having recapitulated the foregoing facts, it is requisite to point out the progress, made in working the law of 1861, modified by that of the 9th November, 1867. The actual Prussian Army, with its permanent Army Corps recruited in each military division, corresponding more or less with a province of the Kingdom, may be regarded as composed of two distinct portions. The first is composed of the eight Army Corps belonging to the eight divisions of old Prussia, in addition to the Guard, which is recruited throughout the whole monarchy; the second is formed of the three Army Corps furnished by the provinces annexed in 1866. As the last have only been submitted to Prussian military institutions since their conquest, they are naturally behind the other eight, in the application of the new law. These two portions of the Prussian Army should be examined separately.

1. *Prussia before 1866.*—In virtue of the law of 1861, the contingent of 1863 (that which took part in the Austrian war during its third year) will pass into the Landwehr on the 1st October, 1870, the latter, which corresponds to the 81 Infantry regiments of old Prussia, will be composed then of the survivors of the five contingents of 1859, 1860, 1861, 1862, 1863; that of 1859 being the last of the weak contingents of 40,000 men raised since 1814, so that it is only on the 1st October, 1871, that the Landwehr will embrace the survivors of five strong contingents of 63,000 men.

This date marks, therefore, an interesting epoch, viz., that when the new military law will be completely at work for that portion of the Prussian Army recruited in the old provinces. Then all the Landwehr men will have been enrolled in strong contingents, and will have served three years with the colours and four years with the Reserve.

It is interesting to ask what, in October 1871, will be the effective strength of the Landwehr. To do this, we must allow

for the losses each contingent of 63,000 men has sustained after seven, eight, nine, ten, and eleven years.

In France, we estimate the losses at four per cent. per annum; but this proportion seems too high for Prussia, where I think it may be estimated at three and a half per cent. We arrive thus at a strength of 229,000 men, as representing the strength of the five contingents of Landwehr on the 1st October, 1871. If the number is required on the 1st October, 1870, only, a period when the Landwehr will still include the survivors of one weak contingent, that of 1859, the number will be a little less, or 214,000 men. One-half of this number is more than sufficient to put all the Landwehr Battalions of Old Prussia on a war footing. It will be remarked that a battalion of Landwehr on a war footing is composed of 600 men, and each Infantry Regiment of the Line of three battalions corresponds with two battalions of Landwehr; to put on foot the 162 battalions, corresponding with the 81 regiments of Old Prussia, $162 \times 600 = 97,200$ men are required; the Landwehr will give a number of men, on the 1st October, 1870, exceeding this number by 100,000; and these will, if requisite, be used to complete the Landwehr Battalions, formed in the provinces annexed, and in the other States of the Confederation.

2. *The Three Provinces Annexed in 1866.*—The Prussian organization was only introduced into these provinces after the conquest, so that the law of 1861 will not be in force until 1878, or 1880.

Now, the Army Corps of these provinces do not include, more than two contingents of reserve men, those of 1865 and 1866. That part of the law of 1861, which makes four reserve contingents requisite, to put the army on a war footing, a part which is most important for its proper organization, cannot therefore be fully carried out until 1st October, 1871; and even during the approaching autumn, these troops can, in case of mobilization, complete the strength of their battalions to a war footing, by calling on their own reserves, without having recourse to those of the eight provinces of old Prussia. The date of the 1st October, 1871, is, therefore, most interesting under more than one head, so far as the results, that follow from the law of 1861 are concerned.

3. *The other States of the Confederation.*—The small States of North Germany are in the same condition as the Provinces annexed by Prussia; that is to say, that they have been submitted to the Prussian laws only since 1866, and that it is during the coming autumn that they will be able to place their troops on a war footing, by the incorporation of their own reserves.

So far as the Landwehr of these States is concerned, its organization cannot be completed before 1878 or 1880. In case of war, the battalions will be raised to 600 men by incorporating in them the excess of the Prussian Landwehr.

I should here observe, that the Landwehr battalions recently formed, as well as those of the three annexed Provinces, and those of the small States of the Confederation, are far from having the requisite number of officers. The Landwehr officers, as is known, are chiefly recruited from the "Volunteers of a year;" but as the Prussian military institutions have only been in operation in the new Provinces and the small States for a few years, the institution of "Volunteers of a year" has hitherto been able to furnish only a small number of officers. At present there is only about one-half the requisite number; and, in all probability, eight or ten years must elapse before the body of officers of the new Landwehr battalions can reach the regulated number. In case of mobilization, they would be compelled to detach from the regular army to the Landwehr a sufficient number of subaltern officers, as was done in 1866.

It might, perhaps, be suitable, to complete this report, by recalling how the Prussian Government has gradually carried out the reduction of the length of service from nineteen to twelve years; but as I have given a complete account of this in my report of the 2nd June, 1869, I simply refer to it.

I have thus shown the gradual development of the application of the military law of 1861, and have tried to show the importance of the year 1871. This year will not only form the subject of the debates of the approaching Reichstag, under the Articles 60 and 62 of the North German Confederation, but it will mark, as I have tried to explain, an interesting date at which all the Prussian Army will be organized in accordance with the law of 1861. I conclude by recapitulating the progress made in this direction.

The 1st October, 1871, the army will be finally organized in conformity with the new law of organization.

1. For Old Prussia—

Regular Army ..	{ 3	Contingents with the Colours.
	{ 4	" in the Reserve.
Landwehr ..	5	"

That is to say, the whole of the military forces.

2. For the three new Provinces, and for all the States of the Confederation—

Regular Army ..	{ 3	Contingents with the Colours.
	{ 4	" with the Reserve.

The complete formation of the Landwehr will not be achieved until 1880; but the battalions can be placed on a war footing (600 men) by means of the overplus of the Landwehr of Old Prussia.

II. Economical Measures.

Sending Men Home before their Time is completed.

Delaying the Annual Contingent.

Furloughs granted by the King.

The 1st October is the nominal date at which the Contingent of the third year passes into the Reserve, to be replaced by the new Contingent. But for several years the Prussian Government has, from economical motives, sent the three years' men into the Reserve in anticipation, at the same time that it has not called up the new levy until after the 1st October. A double saving results from this, which is the greatest of all those that the Government makes; for it represents, on an average, the pay and keep for three months of one-third of the Infantry of the Line, and Foot Artillery.

This year, the dispositions, taken by order of the King, on the 17th February, to send men to the Reserve by anticipation, are the same as last year. The manoeuvres will be concluded in all the Army Corps by the 15th September at latest; and the Commandants have been ordered to send on furlough those men who have taken part in the autumn manoeuvres the first or second day after their completion, or immediately after their return to garrison. The order of the 17th February fixes the number of recruits that each corps must receive to replace those sent to the Reserve. The total number forming the Contingent of this year is 95,540, including 477 men for the Navy. These 95,540 men are—

	Men.
Actual Contingent	86,860
Engaged Volunteers	8,680
Total	<u>95,540</u>

The 86,860 men are divided as follows:—

	Men.
Prussia	69,691
Saxony	7,720
Hesse	795
Other States.. .. .	8,654
Total	<u>86,860</u>

The incorporation of the Contingent of 1870 will take place as follows:—Cavalry, Horse Artillery, and Train Recruits must join on the 15th October; the Foot-Guards on the 3rd November; the line on the 15th December.

But the necessity for economy is so great, that they speak in Prussia of another, which consists in giving temporary furloughs to a large number of men in their second year. These in Prussia are called King's Furloughs. This measure, to which I have already referred in my report of the 2nd December, 1869, and which is only provisional, dates from 1868. I here recall the arrangements.

Each company of Infantry sends on furlough five men, each battalion of Rifles sixty-four men, &c. (*Vide* my report of the 20th December, 1869.

AUTUMN MANŒUVRES IN 1870, AND VARIOUS MATTERS.

Report of 1st July, 1870.

I here give the date and the place where next September the great autumn, army corps manœuvres will take place in presence of the King, in case it may be considered advisable to send this year as last, one or more French officers.

These manœuvres will be carried out by the 10th Corps (Hanover) and the 9th Corps (Schleswig-Holstein).

Manœuvres of the 10th Army Corps (19th and 20th Divisions)

The King will arrive at Hanover on the 4th September; by that time the Army Corps will have completed their regimental, brigade, and divisional manœuvres. The brigade manœuvres will take place the 12th to 19th August, namely, for Infantry in the neighbourhood of Hanover, Hildesheim, Neinbourg and Ohof (*vide* annexed map); for Cavalry at Walsrode.

The 24th August, the troops of each division will be concentrated, and each division manœuvred until the 31st August, the 19th division between Neundorf and Eldagsten, the 20th division between Wechelde, Peine, and Sarstedt.

The 2nd September, one division will manœuvre against another at Pattensen and Arnum, both encamped round Hanover.

The 3rd September, the Army Corps will manœuvre against a skeleton enemy upon the river Ihme.

The 4th September rest, the King will arrive at Hanover; the 5th September, the King will review the Corps.

The 6th, 7th, 8th, 9th, and 10th, great manœuvres upon the Leine.

A detachment of the telegraphic service will take part in the Army Corps manœuvres.

Manœuvres of the 9th Army Corps (17th and 18th Divisions).

Unless some alterations are made, the King will be present on the 13th and 16th September at the manœuvres of the 9th Corps. Before the arrival of His Majesty the regimental and brigade manœuvres, as well as those of the combined Arms, will have taken place. For the last, for example, from the 30th August to the 2nd September, the 33rd Brigade, the 11th Lancers, and four batteries, will manœuvre upon the little river Corbeck, 20 miles to the east of Hamburg. The 27th to the 30th August the 34th Brigade, two regiments of Dragoons, and four batteries, will manœuvre at Boitzenbourg.

These two brigades will then unite, and the division will manœuvre on its own account, on the 5th, 6th, and 7th of September between Poppenbützel, Duvenstedt, Quickborn, and Ellerau ; it will bivouac during the manœuvres.

Towards the 8th of September, the two divisions will be concentrated to the south of the little town of Itzehoe, situated on the Stör, a river which joins the Elbe near Glückstadt, lower than Stadt (*vide* annexed map). The King will arrive in all probability on the 12th or 13th September.

Reviews and manœuvres in the vast tract of country called the Lockfiedler Haide, near Itzehoe, will take place on the 14th, 15th, 16th, and 17th September.

Last year more than 60 foreign officers attended the autumn manœuvres carried out in presence of the King. I am told that at least as many, will appear this year. They will continue the experiments made last year on the employment of preserved and compressed meats, as food for soldiers. These experiments will be on a large scale this time, that is to say, four divisions at once.

Divisional Manœuvres.

The 9th and 10th Corps alone will manœuvre division against division, or with an Army Corps against a skeleton enemy. In all the other corps, including the Guard, the manœuvres will only be those of a single division. I send annexed the programme of those of the Guard ; a large number of Baden, Bavarian, and Wurtemberg officers of all arms will be present. They have been at Berlin for some time ; and have been attached to various corps, for duty.

Exercises for the Engineers.

In the month of August, special exercises for the Engineers will take place at Graudenz, on the Vistula ; the miner companies of the pioneer battalions of six Army Corps and two companies of sappers, will be assembled there.

This month several companies of pontoniers manœuvre on the Sprée, at Köpenick, near Berlin.

Staff Journeys.

This year the journeys of the Staff, intended for the practical instruction of officers, under the direction of the Chief of the Staff, will take place in the 1st, 2nd, 3rd, 5th, 6th, and 11th Corps, and Guard. The Staff officers of the 25th, or Hessian, division will be attached to the 11th Corps. The Staff will continue this year the triangulation of that part of the country that has not yet been surveyed. 8,000*l.* has been allowed for the execution of this work.

Railway Drill.

During this month the different arms of the Guard Corps—Infantry, Cavalry, and Artillery—have been exercised at embarking and disembarking in railway carriages. Similar drill takes place each year in the other corps.

They follow almost exactly to the letter, the rules laid down in the French Army.

Intendance.

A step has been taken by which the organization of the Intendance will to a certain extent be assimilated to ours. Until now the Officers of the Army were not allowed to fill the post of Intendant. However, since the war of 1866, an attempt has been made to train Officers for those functions, as well as for Judge Advocates. Quite recently the Minister has declared that the highest posts in the Intendance can only be filled by Officers from the Army who preserve their rank. The subordinate employments are reserved for aspirants to the post of Paymaster.

It is proposed to train a greater number of Officers in telegraphy and the use of railways.

Remounts.

The territory of the North German Confederation has been divided into four zones, each presided over by a Remount Committee.

1st Zone.	East Prussia and Lithuania.
2nd "	Between the Oder and Vistula.
3rd "	Between the Oder and Elbe, including Schleswig-Holstein.
4th "	Between the Elbe and Rhine.

These committees work from the 1st July to the 30th August in the provinces where Prussia buys horses for the Army. In 1869 the number of horses purchased was 5,800; this year it will be 5,750, namely:—

For the Cavalry	..	..	..	..	4,392
For the Artillery	..	..	..	..	862
For various Services	..	..	..	..	495
Total	..	..	..	..	<u>5,750</u>

School at Anclam.

The new war school established at Anclam will open on the 1st of next August.

ARTILLERY AND VARIOUS MATTERS.

Report of the 5th July, 1870.

I. Field Artillery.

System of 1869.—Bronze has, as is known, replaced steel in the manufacture of the Field Artillery of the Federal Army. However the King has not yet signed the order making this change definite, and the numerous partizans of bronze begin to reproach him for his hesitation. As I have already pointed out, this return to bronze does not involve the abandonment of steel guns, it only means that as steel guns are worn out they will be replaced by bronze. Although the North German Confederation has a very large quantity of old bronze, the Spandau Foundry has cast only a very small number of new guns. The greater part have been sent to the various Artillery depôts, and four 4-prs. have been issued to one of the Horse Batteries of the Field Artillery Regiment of the Guard. I would recall the fact (*vide* my report, 22nd July 1868) that the bronze guns adopted have the same calibre as the steel guns, one of the requirements being that the old projectiles should be utilized; the same carriages and the same rifling as for the 4-pr. and 6-pr. steel guns have been preserved. The breech-closing apparatus is a double wedge, as in the 4-pr. steel guns, the breech-piece is of copper; and to prevent the destruction of the bronze a steel ring is let in at the mouth of the breech-closing apparatus. The following are some of the details of these new bronze guns.

4-pr. Gun.	{	Weight of the Gun with breech-closing apparatus, 605 lbs.
		Weight of charge, 1.1 lb.
		Initial velocity not yet measured.
6-pr. Gun.	{	Length of the Gun, 5.9 feet.
		Weight of the Gun, 946 lbs.
		Weight of the Charge, 1.32 lbs.
		Initial velocity, 1,003 feet per second.
		Length of the Gun, 6.36 feet.

This new system of Field Artillery bears the name of the 1869 pattern. The proportion of 4-pr. to 6-pr. is the same in the 15 batteries composing all the Regiments of Field Artillery in the Federal Army, or in other words there are per regiment—

3 Horse Artillery Batteries, 4-prs.	
12 Foot Batteries	{ 6 of 4-prs.
	{ 6 of 6-prs.
—	
Total ..	15 Batteries (9 4-prs. and 6 6-prs.)

An order issued by the King, dated the 9th June, 1870, orders that all Foot Batteries* shall be described as follows:—

4-pr. batteries as Light Foot Batteries.

6-pr. batteries as Heavy Foot Batteries.

On Reducing all Calibres to One.—*Ideas in vogue.* The return to bronze has revived the hopes of those, who would like to have but one calibre for field guns. I will give some details on this subject, which cannot but be interesting as giving the ideas in current amongst Prussian officers.

The partizans of one calibre propose to take advantage of the alterations being made in the matériel to retain only one field gun, and they prefer the 4-pr. They support themselves by pointing to the efforts made elsewhere, to arrive at unity of calibre, particularly in Italy, where Mattei Rossi has just proposed a new system of artillery. They give the following reasons:—

1. The 4-pr. gun forms now three-fifths of the field artillery of the Federal Army, since each regiment embraces nine 4-pr. batteries and six 6-pr. batteries; in addition to which this gun has been adopted as a movable gun for coast defence.

2. As regards rapidity of fire, the 4-pr. gun which can fire a properly pointed round every 26 seconds is superior to all known guns.

3. As regards lightness, the Prussian 4-pr. it is true is heavier than foreign guns of the same calibre, since it weighs, complete, with gunners mounted, 4,283 lbs., whilst the Austrian 4-pr. only weighs 3,302 lbs., and the French 4-pr. 3,520 lbs., but on the other hand it is horsed with six horses, which makes it more mobile than the latter.

4. The ammunition box of the 4-pr. rifled gun carries a larger number of rounds than the corresponding box of other Powers. It carries 48 rounds, the French box 40, the Austrian 39, and the Russian only 18.

5. So far as accuracy is concerned, it is well known to be superior to the guns of foreign nations.

To all these reasons the partisans of unity add another, perhaps the best of all, that the difference of effect produced by the 4-pr. and 6-pr. is not sufficiently great to justify the retention of two calibres, and they propose, in case these ideas are not accepted, to replace the 6-pr. by a more powerful gun—an 8-pr. perhaps.

I have given here a *résumé* of the discussions, which have come to my knowledge, not only in my conversation with artillery officers, but also by reading several pamphlets which have appeared this year.

The intelligent and working portion of the body of artillery officers elaborates ideas of another nature, which occupy at this moment the attention of the distinguished officers forming the Experimental Committee. They ask, if it is not possible to alter

* That is to say, Mounted Batteries (Field Batteries).

the construction of the field guns, so as to give a flatter trajectory. Rifled field artillery has, according to an expression used in Germany, a very great "defensive force," but its "offensive force" requires to be increased, in order that batteries may play a more efficacious part, and act oftener and more directly during the different phases of a battle. The reason why these ideas now occupy the minds of artillery officers, is that they are in general little satisfied, with the part that their arm took in the war of 1866.

"We have always fired in battles at too great a range," a General said to me one day, "rifled artillery offers this inconvenience, that its efficiency depends too much on the accuracy with which distances are estimated, and judging distances in the field is always very difficult in war, as our officers well know; one great improvement will be the construction of a field gun whose effect will depend less on an accurate estimation of range." I repeat these words because they express the ideas, which occupy the minds of Prussian artillery officers, and in particular the Experimental Committee.

Divesting these ideas of the German words surrounding them, always a little vague as "defensive effect" and "offensive effect," they wish to have flatter trajectories, or, in other words, higher initial velocities.

This subject has been so much agitated, that M. Krupp has proposed to the Minister to construct a 4-pr. steel gun which will give an initial velocity of 1,541 to 1,738 feet per second. M. Krupp, having taken this step, shows he is making efforts to prevent the hostility to steel increasing. I do not know what reply the Minister made.

The Experimental Committee also studies the effect of grape. In consequence of the experience acquired in the war of 1866, when grape was only employed in those rare cases when Austrian cavalry charged a battery, people say, What is its use? It is only efficacious at 400 to 500 yards, and troops rarely approach so near batteries?

I give these ideas for what they are worth, but it is not the less true that the Experimental Committee is about to try if it is not possible to make grape efficacious at greater ranges.

The Committee obtained the following results in experiments to test rapidity last month.

Common Shell fire	..	..	4 rounds in 3 minutes.
Grape	..	..	2 ,, 1 minute.

Re-adoption of Shrapnel.—When the war of 1866 broke out Prussia had not yet completed the transformation of her Artillery, this compelled her to take the field with one-third of her Artillery composed of smooth-bore bronze guns, which strangely enough were attached to the Cavalry. These batteries, and those of the 6-pr. rifled steel guns, were supplied with Shrapnel, whilst the 4-pr. batteries had only common shell and grape.

The smooth-bore batteries hardly fired at all, whilst the Shrapnel shell, fired with a percussion fuze, did so little damage that in 1868 they resolved to discontinue its use. I reported this on the 22nd July 1868. However, experiments have been made to obtain a *time fuze*. Captain Richter has proposed one which gives very good results. But recently a member of the Experimental Committee, Captain Lancelle, has succeeded in altering this fuze, and rendering Shrapnel fire so satisfactory that the Committee has proposed to re-adopt this projectile. This has been approved by the Minister. The only question not yet decided is the proportion of Shrapnel to common shell. I will report this when fixed. The re-adoption of Shrapnel will cause curved fire to be discontinued, and also get rid of small charges from the limbers.

II. Alterations of Carriages of all kinds.

Since 1866, the foundry at Spandau, and the Artillery workshops have done much work. This will be easily understood, when it is remembered that Prussian matériel had to be introduced into the provinces annexed by Prussia, and also into the small States of the Confederation. This work has been completed, and the War Office has undertaken another, which consists in altering all military wagons except gun and ammunition carriages. Store wagons, baggage wagons, field forges, carriages of the different trains, parcs, and supply columns (*de bouche*). A commencement was made by altering the store wagons and forges.

The store wagon carried three spare wheels, fixed on a vertical axis, consequently carried horizontally. Experience showed that this arrangement did not give steadiness enough to the wheels, and that it required a difficult operation to load and unload them. The limber has been altered so as to admit of the wheels being placed there; in addition to which the two horses which drew this wagon were not found to be enough. For the future it will be horsed by four horses. For the field forge, a smaller pattern on an improved system has been made; the old forge was open, the new is covered. These alterations are for the store wagons and forges of the 4-pr. batteries; they are far advanced, and will be followed by similar alterations in the 6-pr. batteries. The artillery have still some wagons of the old pattern of 1842 and 1861. All the carriages will be replaced by the present pattern of 1864. The matériel so replaced is intended in case of mobilization to be used by reserve batteries.

The way in which the wheels locked in 1866 was not satisfactory; experiments are being made to test a new method.

III. Siege and Garrison Artillery.

It would be difficult to give any idea of the confusion in which the siege and garrison artillery of Prussia at present is.

There are many calibres of various metals—iron, bronze, and steel. Smooth-bore and rifled guns, with all kinds of breech apparatus and carriages of every pattern.

If this Artillery be classified it will be found to be composed as follows :—

4 natures of 6-prs.	..	{	1 Iron smooth-bore.
		{	1 Bronze smooth-bore.
		{	1 Iron rifled.
		{	1 Steel rifled.
		{	1 Short brass smooth-bore.
5 natures of 12-prs.	..	{	1 Iron smooth-bore.
		{	1 Iron rifled.
		{	1 Bronze rifled.
		{	1 Converted rifled gun.
		{	1 Short smooth-bore iron.
		{	1 Long " "
		{	1 Long bronze smooth-bore.
7 natures of 24-prs.	..	{	1 Iron rifled.
		{	1 Bronze rifled.
		{	1 Steel rifled.
		{	1 Converted rifled bronze.
		{	1 7-pr. Smooth-bore bronze.
4 Howitzers	..	{	1 10-pr. " "
		{	1 25-pr. " "
		{	1 50-pr. " "
2 Shell Guns	..	{	1 25-pr. Iron smooth-bore.
		{	1 50-pr. " "
		{	1 7-pr. Bronze. "
4 Mortars	..	{	1 25-pr. " "
		{	1 25-pr. Iron.
		{	1 50-pr. Bronze.
1 Pierrier	..	..	Bronze.

Adoption of an Iron 24-pr.—The Prussian Artillery desires, as is known, to reduce the number of calibres composing its siege and garrison material; and has consequently experimented for several years with a cast-iron gun called the 5·895-inch gun, intended to replace the heavy, smooth-bore howitzers, the 24-pr. guns, and the 25-pr. shell gun. The new gun just adopted is a short 24-pr. rifled gun, with a calibre of 5·895 inches; a breech-loader, on the double wedge (Kreiner) system. It is seven calibres shorter than the old 24-pr. gun, and can be fired with a greater elevation; it weighs 2,750 lbs. at least. Intended for ricochet fire, it will be employed both as a siege, and garrison gun, and it will be used both in breaching batteries and counter batteries, where there would be a difficulty in placing the old 24-pr. The carriage is 6' 6·6" inches high; the weight of the projectile is 61·6 lbs; the greatest range 6,594 to 7,111 yards.

IV. Naval Artillery.

If steel has fallen into disrepute in the construction of field guns, there appears to be a similar tendency, so far as naval guns are concerned, iron and bronze gaining ground. The Federal Navy has already adopted bronze rifled guns for a portion of the armament of its screw boats, and whilst the Artillery of the Iron Clads is altogether of steel, the "Arminius" has just been armed with bronze 72-prs. It may

be remembered that during the trials of last year a 72-pr. projectile fired with a charge of 24·2 lbs. of powder, penetrated a 5-inch plate at a range of 547 yards.

The Federal Navy has actually the following calibres :—

Smooth-bores.	}	For small Vessels.	Rifled Guns.
24-prs.			Iron 12-prs.
30-prs.			„ 24-prs.
36-prs.			Steel, 24-prs.
68-prs.			„ 36-prs.
Short 12-prs. }			„ 72-prs.
Long 12-prs. }			Bronze 4-prs. for small Ships.

Practice against Iron Plates.—I have given an account in my reports of the 10th July and 22nd November, 1868, of the experiments made at Tegel against iron plates, they will be continued again this autumn with a steel 11-inch gun.

Practice against Bomb-proof and Shielded Casemates.—I gave some details on the 22nd November, 1868, on the bomb-proof and shielded iron casemate made at Tegel by M. Gruson, and designed for the protection of Coast Artillery. This erection has cost more than 16,000*l.*, and has necessitated castings weighing 165,000 lbs. Apparently ashamed of this extravagance, I have not hitherto been able to obtain information as to the experiments that have taken place. Shortly, the experiments have been of two kinds; they have fired a 72-pr. gun believed to be protected, from within the casemate, and have then proceeded to fire against the casemate. The gun within the casemate was fired with 28·6 lbs. of powder at the rate of one round per minute; the gas caused much inconvenience to the gunners. The apparatus for discharging the gun was not satisfactory, and the impossibility of using so short a gun on account of the force of the detonation and the back stroke of the gas was acknowledged; the model of the carriage was satisfactory.

Practice was begun at the outside with a 24-pr. gun, firing solid steel shot at a range of 547 yards; it was then continued with the 72-pr. gun, at a range of 1,094, and a charge of 33 lbs. of powder. The effects were nil. The Krupp projectile fired at a range of 1,094 yards from a 96-pr. gun, produced, at the back of the casemate, a crack 23 inches long; a second shot striking just above enlarged the crack by 6 inches. The 72-pr. and 96-pr. were then advanced to within 382 and 218 yards of the casemate, and many portions of it were completely broken up and dislocated. Last month the walls were fired at with an angle of inclination, and this autumn projectiles, weighing 495 lbs., will be used this not so much with the object of testing the resistance of the casemate, as for ascertaining the penetration of heavy projectiles.

According to Mr. Gruson, the United States propose to adopt his plan for casemates for coast defence. It is proposed to renew the experiments at Tegel.

V. Miscellaneous.

School for Non-commissioned Officers.—North Germany has

four schools for Infantry non-commissioned officers, and one school for Cavalry non-commissioned officers forming a portion of the Cavalry school at Hanover. The regulated duration of this course is three years, or two only for those who distinguish themselves. The pupils of these schools are soldiers who prepare themselves for the functions of non-commissioned officers. The course at the school gives them, however, no right to the grade. It is proposed to form a school for non-commissioned officers of artillery.

Distinctions awarded to the Best Shots.—The King has just issued an order showing the importance attached to good shooting. He has ordered that a distinctive badge be given to gunners who shoot well, as is already done to Infantry soldiers. This badge is awarded in the proportion of one non-commissioned officer per battery and one private per company of Infantry.

Alteration in Dress.—By the order of the 19th May, 1870, the dress of the horse artillery, the officers of field batteries, and train has been modified. The long trousers with boots over them have been replaced by short trousers strapped with leather and knee-boots.

This alteration had been already ordered for Dragoons and Lancers on the 24th March, 1870.

Whip, Cutting Whip.—The drivers have in lieu of a whip a long cutting-whip with a lash. The officers, non-commissioned officers, and men prefer the whip as being more convenient; it is less expensive than our whip, but perhaps does not last so long.

Railway Committee.—A Committee composed of officers and civil employés from both Northern and Southern States has been sitting at Berlin for three weeks to draw up rules for the transport of troops and stores of all kinds, in case of war, on the railways belonging to the different States.

The offensive and defensive treaties made in 1866, between the North German Confederation and the Southern States, explains and justifies this Committee.

I attach to this report—

1. Two copies of a plan, not quite correct, of the harbour of Wilhemshaven.

2. A map of Hanover and Brunswick to attach to my former report. It will allow the ground for the manœuvres of the 10th Corps to be studied.

3. A copy of the regulations of the Sanitary Corps.

4. A copy of a pamphlet termed "Über die Thätigkeit und Verwendung der Cavallerie un Feldzuge von 1866." It deserves translation. It is anonymous, and is said to be by the Staff officer who wrote two years ago the "Taktische Rückblicke."

2nd Battalion of the 3rd Regiment of Foot Guards at Dantzic.

During the time of preparation for war this battalion had received a portion of its reserve men, raising its effective strength on the 6th May to 55 non-commissioned officers, 25 musicians, and 602 men, including hospital orderlies.

Order to Mobilize arrived at Dantzic	6th May.
Formation of depôt commenced	11th May.
The battalion detailed for the purpose, 1 officer, 9 non-commissioned officers, 4 musicians, and 69 men.	
Formation of supernumerary company.	
Battalion handed over its barrack	12th May.
Greatest number of reserve men rejoined	13th May.
The number was 30 non-commissioned officers, 1 musician, 358 grenadiers and 9 train soldiers, and 2 hospital orderlies, 3 non-commissioned officers and 14 grenadiers of the oldest contingent were sent to the depôt.	
The battalion had to receive in addition 12 train soldiers, 32 horses, to horse the battalion wagons and mount the officers and surgeons.	
1 Captain, 2 Lieutenants and 3 non-commissioned officers sent to Landwehr Battalion at Königsberg	20th May.
Mobilization completed	20th May.
Length of Mobilization	15 days.

Battalion of Rifles of the Guard at Berlin.

Order to prepare for war	4th May.
Order to Mobilize	5th May.
Contingent of 1857 detached for the depôt company.	
Cartridges arrived from Spandau; Mobilization completed	19th May.
Length of Mobilization	15 days.

Regiment of Hussars of the Guard at Potsdam.

Order to Mobilize	7th May.
First Reserve men rejoined	8th May.
Several Officers and non-commissioned officers sent to seek for and bring up horses; Mobilization completed	
Length of Mobilization	23rd May. 17 days.

Regiment of Field Artillery of the Guard, Berlin.

Order to Mobilize	5th May.
Mobilization completed	24th May.
Length of Mobilization	20 days.

II. Telegraphic Despatches.

We have found amongst the papers which Colonel Stoffel has been good enough to entrust to us minutes of the telegraphic despatches in cipher which he sent to the War Minister on the 14th and 17th July, 1870; that is to say, during the days which immediately preceded the declaration of war. These are the despatches referred to in the letter written by our late Military Attaché forming the Preface to this book.

They informed the Minister that everyone thought that

France had surprised Prussia, and that they expected to see a French Army cross the Rhine, and that the minds of everyone were disquieted. Our Attaché also reported that the order to mobilize had been issued to all the Army Corps on the morning of the 15th July; that it extended to all the military forces of Germany, and that, an account of the urgency of the case, the period of Mobilization for each corps had been reduced to 11 *days*, counting from and including the 15th July.

The despatch of the 16th July finished thus:—

“ I have pointed out in my report of the 15th July, 1869, “ that 8 or 9 days is the time requisite for the transport of “ several Army Corps, mobilized each in its province, by railways “ to a given point of concentration ; thus, after 20 days, counting “ from the 15th July, Prussia will have upon several points of “ our frontier, several armies of 100,000 to 120,000 men each.”

Our readers will be struck, as we were, by the exactness of this information, for about 20 days after the 15th July the action at Wissemburg, and the battles of Forbach and Wörth took place.
